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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,912	08/23/2000	Kiyoshi Asami	001062	9494

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ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

NGUYEN, TU MINH

ART UNIT	PAPER NUMBER
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3748

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DATE MAILED: 08/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/643,912

Applicant(s)
Asami et al.

Examiner
Tu M. Nguyen

Art Unit
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 13, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Aug 23, 2000 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

1. An Applicant's Amendment filed on August 13, 2003 has been entered. Claim 5 has been amended. Overall, claims 5-8 are pending in this application.

Claim Rejections - 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al. (U.S. Patent 5,801,499) in view of Tomisawa (U.S. Patent 5,606,855).

Re claim 5, as illustrated in Figures 1, 3, 6, and 7, Tsuzuki et al. disclose a catalyst warming control apparatus including a catalyst temperature sensor (17) for a hybrid vehicle asserting control over the vehicle both when the vehicle is moving and when the vehicle is standing still, having an internal combustion engine (10), a generator (40) for generating electric power from an output of the internal combustion engine, a power storage unit (44) for storing electric power generated by the generator, and an electric motor (40) driven by the electric power

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stored in the power storage unit, the hybrid vehicle being driven by at least one of the internal combustion engine and the motor, the catalyst warming control apparatus comprising:

- a clutch (21) for performing the connection or disconnection of the transmission of the power between the generator connected to the engine and to the motor;

- a temperature detector (17) for detecting the temperature of a catalyst (16);

- a first comparison circuit for comparing the detected result from the temperature detector with a preset first reference value (step S13); and

- a control circuit for allowing the generator to generate electric power and to store the power in the power storage unit when the internal combustion engine is driven, and when the detected result from the temperature detector is equal to or below the first reference value (step S13 with N answer and steps S28-S35; line 61 of column 9 to line 8 of column 10).

Tsuzuki et al., however, fail to disclose that the temperature detector can be removed by estimating a temperature of the catalyst using a coolant temperature detector that detects an engine temperature.

Tomisawa teaches an apparatus for estimating the temperature of a catalyst simply and accurately by using a coolant temperature sensor (15). Tomisawa further teaches that the apparatus does not include an additional temperature sensor located at the catalyst, which can incur more cost to the apparatus (lines 64+ of column 1). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the

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apparatus taught by Tomisawa in the apparatus of Tsuzuki et al., since the use thereof would have saved cost and lowered the complexity of the apparatus.

Re claim 6, the modified apparatus of Tsuzuki et al. further comprises:

- a remaining charge detector (45) for detecting a remaining charge of the power storage unit; and
- a second comparison circuit for comparing the detected result from the remaining charge detector with a preset second reference value (DEFINED VALUE 1 in Figure 6) relating to the remaining charge,

wherein the control circuit drives the vehicle by the output from the internal combustion engine, engages the clutch, and allows the generator to generate electric power and to store the power in the power storage unit, when the detected result from the temperature detector is equal to or below the first reference value according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is equal to or below the second reference value relating to the remaining charge according to the output from the second comparison circuit (see Figures 6 and 7 and lines 13-40 of column 11).

Re claim 7, the modified apparatus of Tsuzuki et al. further comprises:

- a remaining charge detector (45) for detecting a remaining charge of the power storage unit; and

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- a second comparison circuit for comparing the detected result from the remaining charge detector with a preset second reference value (DEFINED VALUE 2 in Figure 6) relating to the remaining charge,

wherein the control circuit allows the generator to generate electric power, disengages the clutch, and drives the vehicle by the generated electric power and stores the electric power, when the detected result from the temperature detector is equal to or below the first reference value according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is above the second reference value relating to the remaining charge according to the output from the second comparison circuit (see Figures 6 and 7 and lines 13-40 of column 11).

Re claim 8, in the modified apparatus of Tsuzuki et al., the control circuit allows the generator to generate electric power, and drives the vehicle by the motor, when the detected result from the temperature detector is equal to or below the first reference value according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is above the second reference value (DEFINED VALUE 2 in Figure 6) relating to the remaining charge according to the output from the second comparison circuit (see Figures 6 and 7 and lines 13-40 of column 11).

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Response to Arguments

4. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, applicant argues that there is no need to combine Tomisawa with Tsuzuki et al. because the catalyst temperature sensor in Tsuzuki et al. is more accurate in determining a temperature of the catalyst (16) than the catalyst thermal model in Tomisawa (pages 5-6 of Applicant's Amendment). The examiner respectfully disagrees with this argument. As indicated on lines 32-47 of column 6, Tomisawa accurately estimates a catalyst temperature based on an estimation of heat loss from the catalyst to the atmosphere and an estimation of received heat amount absorbed by the catalyst from the exhaust gas. To do this, Tomisawa utilizes a coolant temperature sensor (15) and various engine sensors and meters (i.e., speed sensor (18) and air flow meter (13)) which already exist in an engine to compute a heat loss from a catalyst external surface to the atmosphere and a heat input from the exhaust gas to the catalyst internal body. Thus, an overall net heat transfer between the catalyst (16) and its surroundings can be accurately determined. In this way, an

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accurate temperature if the catalyst internal body can be easily and simply estimated at any given time during the catalyst operation.

Applicant appears to argue that there is no mention of a coolant temperature sensor or an optimum location for a coolant temperature sensor in Tsuzuki et al.; and thus, it is difficult to combine Tomisawa with Tsuzuki et al. (bottom of page 6 to top of page 7 in Applicant's Amendment). The examiner again respectfully disagrees with this argument. As mentioned above, a coolant temperature sensor already exists in an internal combustion engine for a motor vehicle. One with ordinary skill in the art would also realize this since a controller needs temperature inputs from the coolant temperature sensor to activate a fan to cool a radiator when the coolant temperature in the radiator exceeds a critical temperature.

In response to applicant's argument that Tsuzuki et al. fail to disclose a catalyst temperature sensor (page 7 of Applicant's Amendment), the examiner again respectfully disagrees. As shown in Figure 1, Tsuzuki et al. clearly disclose a catalyst temperature sensor (17).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9302. For After Final communication, the fax phone number is (703) 872-9303.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

Tu M. Nguyen

August 15, 2003

Patent Examiner

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Thomas Denion
THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700